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## SPONTANEOUS COMBUSTION.

It is well known that certain substances and compositions produce the phenomenon of spontaneous combustion. Explosions in coal-mines, as also in flour-mills, have, so far as it is possible to trace causes, been produced by the generation of heat. The vegetable kingdom is perhaps the greatest offender, and until recent years, the suspicion of felonious practices in regard to firing stacks, has sent many an innocent person to prison.

A century ago, spontaneous combustion, or 'inflammation,' as it was then designated, occupied the minds of men of science; and the Rev. William Tooke, F.R.S., published some observations on the subject, chiefly taken from his experiences in Russia. Owing to a recent fire in a neighbouring village, which did a great amount of mischief, and was said to have had its origin in the doctoring of a cow in a cowhouse in the village, Mr Rüde, an apothecary of Bautzen, prepared to make some experiments. He knew that the countrymen were in the habit of applying parched rye-bran to their cattle, for curing what was known then as the thick-neck. Accordingly, he roasted a quantity of rye-bran by the fire till it had acquired the colour of roasted coffee, and then wrapped it up in a linen cloth. In the space of a few minutes there arose a strong smoke through the cloth, accompanied by the smell of burning. Shortly afterwards, the rag grew as black as tinder, and the bran, now become hot, fell through upon the ground in little balls. The experiment was repeated at different times, and always with the same result.

In the spring of 1780, a fire was discovered on board a frigate off Cronstadt. After the severest scrutiny, no cause for the fire could be found. The probability is, however, strongly in favour of spontaneous combustion; for in the following year the frigate *Maria*, which also lay at anchor off Cronstadt, was found to be on fire. The fire was, however, early perceived, and extinguished. After

strict examination, nothing could be discovered as to its origin. A Commission of inquiry was held, which finally reported that the fire was probably caused by parcels of matting tied together with packthread, which were in the cabin where the fire broke out. It was found that the parcels of matting contained Russian lampblack, prepared from fir-soot moistened with hemp-oil varnish. In consequence of this, the Russian Admiralty gave orders for experiments to be made. They shook forty pounds of fir-wood soot into a tub, and poured about thirty-five pounds of hemp-oil varnish upon it; this stood for an hour, after which they poured off the oil. The remaining mixture they wrapped up in a mat, and the bundle was laid close to the cabin in the frigate *Maria* where the midshipmen had their berth. To avoid all suspicion, two officers sealed both the mat and the door with their own seals, and stationed a watch of four officers to take notice of all that passed through the night. As soon as smoke should appear, information was to be given.

The experiment was made about the 26th of April at about eleven A.M. Early in the following morning, about five A.M., smoke appeared issuing from the cabin. The commander was immediately informed by an officer, who through a small hole in the door saw the mat smoking. Without opening the door, he despatched a messenger to the members of the Commission; but, as the smoke became stronger and fire began to appear, it became necessary to break the seals and open the door. No sooner was the air admitted, than the mat began to burn with greater force, and presently burst into a flame.

Mr Georgi of the Imperial Academy of Sciences was appointed to make further experiments, the result of which confirmed the suspicion of spontaneous combustion in the Russian official mind in a remarkable degree.

Montet relates in the *Mémoires de l'Académie de Paris* of 1748, that animal substances under certain conditions may kindle into flame, and that he himself had witnessed the spontaneous combustion of dunghills. He states that he had known

woollen stuffs prepared at Sevennes to kindle and burn to a cinder. The same thing happened in Germany in 1781 at a wool-comber's, where a heap of wool-combings piled up in a close warehouse seldom aired, took fire of itself. This wool had been little by little brought into the warehouse, and, for want of room, piled up very high, then trodden down, that more might be added to it. Wool, when saturated with oil, as is well known in all districts where woollen manufactures are carried on, is constantly liable to go on fire; hence, all wool-waste is kept in places apart from the general buildings of the factory.

Modern science and careful investigation have done much to remove the mystery which a century ago surrounded all aspects of the subject of spontaneous combustion. It is not much more than a century and a half since the theory first began to obtain that the human body under certain circumstances, but particularly where the victim had long been addicted to habits of intemperance, was subject to spontaneous combustion. The theory was never held to any extent in our own country; but it found very general acceptance among scientists on the continent; and many cases from that time onwards have been published with considerable minuteness of detail. A recent investigator—Dr Ogston of Aberdeen—has, however, analysed the complete literature of the subject, and out of about sixty cases bearing upon it, he has not found one trustworthy case from which the existence of such a phenomenon could be deduced. His investigations have confirmed him in the belief of an increased combustibility of the human body under certain conditions; but the majority of reported cases, he thinks, point altogether to accidental ignition under these favourable circumstances. The human body, it may be stated, cannot, in ordinary circumstances, be considered very combustible, seeing that nearly three-fourths of its constitution by weight is composed of water; and what may be considered favourable circumstances to accidental ignition, it must be admitted, does not clearly appear. We have no wish to enter into particulars regarding such cases; we desire rather to elucidate some of the conditions favourable to spontaneous combustion in a variety of circumstances involving the safety of much valuable property, if not of life itself.

The experience, as well as experiments of the Russian Admiralty, above referred to, have found their counterpart in more than one instance in our own country in recent years. In 1840 there was a great fire in Plymouth Dockyard, which, as far as could afterwards be ascertained, was due to the spontaneous heating and combustion of heaps of hemp and flax impregnated with oil. More than twenty years later, there were great fires in the Liverpool dock-warehouses, involving immense loss of property, which were ascribed to the heating and spontaneous ignition of damp cotton. Later still, experts were called upon to

investigate the causes which led to the destruction by fire of Her Majesty's ships the *Imogene* and the *Talavera*, in Devonport Dockyard; and it was reported to the Admiralty that the fire could only be traced to the spontaneous ignition of oakum, tow, and similar substances, which had been used by the shipwrights and others in wiping the oil from their tools; the waste thus used having afterwards been thrown into a large bin. Instances might readily be multiplied in which vegetable substances, such as cotton, hemp, tow, flax, dry woody-fibre, and we may add rags and waste of all kinds, having become impregnated with oil, have caused fires more or less serious from spontaneous ignition.

Up to a comparatively recent date, considerable vagueness existed as to the exact conditions necessary to favour spontaneous ignition of such substances; but owing to the experiments of Galletly (Chemical Section, British Association, 1872), Attfield (letters to the *Times*, 1873), and others, we are now in a position to understand clearly the relation to combustion of both animal and vegetable oils. Taking, for example, a handful of cotton-waste after it had been soaked in boiled linseed-oil, the excess of oil being removed by pressure, and placing it among dry-waste in a box into which a thermometer was inserted, and keeping it at a temperature of one hundred and seventy degrees, Galletly found that the mercury began to rise rapidly from five to ten degrees every few minutes; and at the end of seventy-five minutes the thermometer indicated three hundred and fifty degrees Fahrenheit. At this point, the smoke issuing from the box revealed that the cotton was in an active state of combustion, so that, on exposing it to the open air, it quickly burst into flame. In the case of similar materials saturated with raw linseed-oil and placed in a smaller box, active combustion was going on in four or five hours; with rape-oil, the cotton was reduced to ashes within ten hours; with Gallipoli oil—a crude olive-oil—rapid combustion was going on within six hours; while castor-oil, with its higher specific gravity, took two days to produce the charring effect. Regarding oils of animal origin, it was found that lard-oil produced rapid combustion in four hours; seal-oil in one hundred minutes; while sperm-oil refused to char the waste. It has since been pointed out that this last oil was probably adulterated with some mineral oil, all mineral oils having apparently the power of arresting to a considerable extent the development of this destructive influence, when combined with the fatty oils. This is explained in scientific language by saying, that the one class of oils are oxidisable, and the other class non-oxidisable.

We may be excused for explaining what the term oxidisable means, as the explanation contains the rationale of spontaneous combustion, so far as oil-saturated substances are concerned; and the

lesson is fraught with importance. Every one knows what is meant by drying in the air any substance saturated with water or spirit. The wetted substance dries because the free play of air around it absorbs its moisture, or, in ordinary language, causes the water or spirit to evaporate; and the process is so elementary and well understood, that it requires no further explanation. The same substance, however, saturated with any fatty oil, does not dry in the same way from the evaporation of the oil; it dries by reason of absorbing oxygen from the atmosphere; in other words, it becomes oxidised; and in this process it undergoes a species of combustion, differing not in character, but only in degree, from that which coal once lighted undergoes in our fireplaces. If we imagine the heat given out in the process of drying, or as it may be called, of slow combustion, not being allowed to escape, but, on the other hand, rather confined in its sphere, and so made to help to feed the process of heat-raising, we have all the elements required to make up an interesting but now well-known instance of spontaneous combustion. Such are in reality the conditions which more or less surround the spontaneous ignition of all vegetable substances impregnated with fatty oils; and it is not too much to say, that although the conditions are not so widely known as they might be, or as they should be, still they are now sufficiently known to cause all wool and other waste in large factories to be carefully looked after.

A similar result to that just described is produced if wheat or corn or barley, &c., be stacked in the green state or in a damp state; but in all such cases, the chemical explanation differs from the foregoing. All such substances contain nitrogen, and are liable, under favourable circumstances, such as damp, absence of currents of air, &c., to fermentation. During this process of fermentation—a somewhat intricate chemical one, on which we do not need to enlarge—heat is evolved, and the preliminary stages of this process, in which stacks have been seen 'to smoke,' must be familiar to many of our readers. Many instances might be given of reported cases of spontaneous combustion from the heating of victuals in stack; but owing to the doubts which often surround such of being acts of incendiarism, we will give particulars of one typical case only, not quite modern, but sufficiently well authenticated to make it stand out as characteristic of this class. It is taken from the *Annales d'Hygiène*, 1843. A quantity of oats stored in a barn had been consumed by fire, and the proprietor suspected the act to be one of incendiarism. Several experts were consulted; and on inquiring into all the circumstances, they unanimously concluded that the fire was the result of spontaneous combustion, caused by the fermentation of the grain stored in a damp state. Several things pointed unmistakably to this conclusion, such as the fact, that the oats were proved to have been stored damp; that labourers had noticed the heat of the oats several days previous to the fire; that some of the sheaves that had been removed the day previous to the fire to be thrashed, were charred and discoloured; and above all, that the centre of a large pile of sheaves was burnt and blackened, while the outside of the sheaves retained their natural colour. No more con-

clusive evidence, we think, could be produced in support of spontaneous combustion than is here given.

Other substances which are not fermentable, such as cotton, flax, and jute, are nevertheless liable to spontaneous combustion from simple oxidation, if stored in the damp state; and more than one instance might be given of ships laden with such goods being destroyed at sea by fire, the presence of which could only be reasonably accounted for on the theory of spontaneous ignition. Only a few years ago, a ship heavily laden with wool from Australia arrived at Plymouth with fire raging among the wool in the hold. The fire had been burning for two days, and without doubt had been caused by the wool getting damp, heating, and then igniting. Had the fire occurred only a few days earlier, the probability is there would have been a terrible catastrophe. In the same year, a ship laden with jute and castor-oil from Calcutta was discovered when off Portland to be on fire. It was ultimately totally destroyed. In this case, the fire could only be accounted for on the supposition that some of the oil had leaked, and come into contact with the jute, causing oxidation, as already explained.

Before passing from the spontaneous ignition of organic substances, we may quote an interesting case from the *Chemical News*, 1870. A fire occurred in that year in a silk-mercer's establishment in Paris; and the expert who investigated the whole circumstances could only account for it on the theory of the spontaneous ignition of a lot of silks massed together. The peculiarity of this case was, not that the silks had been stored in bulk in a damp state, but in too dry a state; the probability, however, being greatly in favour of the theory, that the chemicals employed in dyeing the silk had very much to do with the origin of the fire.

Many chemical compounds, as well as mixtures, are very liable to spontaneous combustion, the action in such cases generally being much more rapid and energetic than in the cases just considered. Of the chemical compounds, we might take the now well-known nitro-glycerine as typical. This substance, if not carefully prepared and purified, is certain to undergo decomposition, ultimately ending in spontaneous combustion of a terribly energetic character. We might also take the phosphorus composition used in the making of lucifer-matches, or the potash compositions used to produce coloured fires in theatres and pyrotechnic displays, as representative. The phosphorus mixtures (matches) all ignite in the mass at a comparatively low temperature, in the majority of cases not greatly exceeding that of an ordinary summer sun's rays—or in other words, at a temperature ranging from one hundred and ten to one hundred and thirty degrees Fahrenheit; while the potash mixtures (coloured fires) ignite at a black heat—or, in other words, at a temperature below nine hundred degrees. Notwithstanding the difference in the igniting point of the two preparations, the potash mixtures are the more dangerous of the two, and more than one instance has occurred in the experience of the writer in which they have ignited at ordinary temperatures spontaneously. The principal cause of spontaneous combustion in these mixtures is the presence of

some impurity in one or other of the ingredients, such as a trace of free acid in the sulphur or other ingredient entering into their composition; but instances have also occurred in which friction or concussion has produced the same results. In the case of lucifer-matches, even with the low temperature at which they ignite, there are probably fewer authenticated cases of fires resulting from spontaneous ignition in the storing and keeping of them, than from almost any other preparation of an equally dangerous kind. There is, however, one source of danger which may not be generally known, and which cannot be too well known—namely, the penchant that mice and similar vermin have for phosphorus preparations. We have no hesitation in pointing to friction caused by the nibbling of these little torments, as a fertile cause of fires of undiscovered origin.

It is somewhat remarkable that although gunpowder is another of this most dangerous class of mixtures, there is not, so far as we are aware, one authentic case on record of its spontaneous ignition either in storing or using. Professor Abel, in a lecture before the Royal Institution, a number of years ago, gave particulars of an explosion of gunpowder at the government works at Waltham-Abbey, which, in the cause producing it, is characteristic of most accidents of this kind. Although not altogether a case of spontaneous combustion, it bears directly upon the subject, and it shows above all the care and ability bestowed by experts on any investigation which they are called upon to make; and to this, along with a better knowledge of the conditions favourable to the generation of combustion, do we assign the reason why there are fewer cases reported in recent years arising from this cause, compared with fifty or one hundred years ago. With a short account of this explosion, we will close our observations, even although we cannot pretend to have done much more than touched on the modern aspects of this interesting subject.

In the works referred to, there were several mills in one continuous building, each one surrounded on three sides by massive walls; the compartment inclosing each mill being so arranged that the roof and one side were capable of being very easily blown away in the event of an explosion, so that the force of the explosion exhausting itself in this direction, there would be less destruction of property. In one of these mills, the ingredients of the gunpowder had been mixed in the damp state as usual by means of the millstones; the composition had been nearly all removed from the bed of the mill, and the men were engaged in the operation of slightly lifting the millstones with a crowbar, so as to get at the remaining part of the gunpowder—amounting to about half a pound—upon which the millstones rested. This operation the men had in this instance performed with a naked crowbar, and not, as was the usual practice, protected with leather. The result was that an explosion occurred, through the ignition of some of the particles of gunpowder exposed to the friction; one man being fatally, and several others badly injured, apart from the destruction of property which followed. So far, the matter was evidently plain enough; but, strange to say,

the explosion extended, notwithstanding all the precautions adopted, from this one mill to two mills on the one side, and one mill on the other side; and of course it was necessary to discover how this should have occurred, to prevent, if possible, a repetition of the disaster.

This probably cannot be better described than in the words of Professor Abel himself. 'In the incorporation of gunpowder, a small quantity of dust is always unavoidably produced, notwithstanding that the mixture is kept constantly damp while under the mills; small particles of the powder, therefore, continually attach themselves to the walls, and although these are swept carefully from time to time, it is impossible to prevent small portions from remaining on them. It was imagined that the individual mills were so perfectly separate and isolated from each other by the plan of the building, that an explosion from one could not communicate to the other, particularly as an arrangement existed whereby an explosion in one mill would instantly cause a mass of water to fall upon the powder in the other mills; but there was a small shaft running through the wall from one mill to another by which this descent of water was insured; and this shaft passed through very small openings in the walls, closed by tight little doors, so that there were only one or two little crevices communicating from one mill to the other. These, however, were sufficient to allow the explosion to pass from one mill to the others, and to bring about the explosion of the powder upon the mill-beds before the water could reach it. The powder-dust had formed a train upon the walls, and the flame of the first explosion reaching this, was led to the openings just spoken of, and thus passed from mill to mill.'

In conclusion, we would urge the necessity of having mills and other factories constantly swept free from that apparently harmless substance, dust.

## ONE FALSE, BOTH FAIR;

OR, A HARD KNOT.

CHAPTER XXIV.—I SHALL WIN.

As soon as the sound of the closing street-door reached her vigilant ears, Madame de Laloue turned towards her fair young hostess. The Sphinx, to which the current gossip of modern Anglo-Egyptian society had likened her, could scarcely, in mythic flesh and blood, or in its original rock-shape, as when the battered idol was fresh from the chisel of some archaic sculptor of the Pyramid building days, have presented a more perplexing aspect. There was a grand massive comeliness about the woman, that matched well with the dignity of bearing which on occasion she could assume, although not seldom her deportment was as frivolous as that of a *Parisienne* of the Second Empire. She seemed thoroughly serious now, for the moment.

'My young friend,' she said, fixing her steady stony eyes on the beautiful face of the girl before her, '*à nous deux, maintenant!* It is time that we should understand one another, is it not? There is scarcely such a thing as real neutrality, you know, in private war, as in public. Those



who are not with us are generally ready, when opportunity serves, to deal us a sly stab, for the benefit of the adversary. When last you and I talked together of the *grande affaire*, you asked for time to think. Nothing more reasonable. I acceded. Well, *ma mie*! you have had time to think. The nights and days that have elapsed have, I trust, brought counsel, according to our proverb. And now I have come for my answer. It was an *ultimatum*—excuse the diplomatic technicality on the part of one who was nurtured, so to speak, in a Ministry of Strange Affairs, as we other continentals call your F. O. Do you accept or reject the alliance of Louise de Lalouve? The final question was sternly, almost threateningly asked, and then the questioner paused for a reply.

Sir Pagan's sister cast down her beautiful eyes, and she drew her breath more quickly, and her colour went and came. It seemed as though there were some struggle going on within her heart, as if she had to crush down some innate feeling of repugnance or of distrust, before she could assent to the proposition of her dubious foreign friend. The Countess, on the other hand, seemed to read her thoughts, to judge by the slight frown and the slight shrug of impatient displeasure. But when the girl looked up, there was no trace of ill-humour on the massive face of Madame de Lalouve.

'What choice, Madame, in such a position as mine, can I have?' replied Sir Pagan's sister. 'Help to me, in my plight, is very much what help would be, rendered to a drowning wretch at sea. I am very lonely. My twin sister has become my bitterest foe. My brother Pagan is good and kind; but he is not the sort of brother to whom a sister, sorely tried, can turn in the hour of need. I feel, sometimes, very very much, how alone I am in the world.' She bowed her head, with all its twisted weight of golden hair, almost to her knees now, and sobbed aloud.

Madame de Lalouve looked scornfully on. Usually, a woman is quick to comfort a woman whom she does not personally hate. There is an emotional freemasonry amongst the feminine sex that links heart to heart, somehow, when grief is in question and no grudge bars the way. But Countess Louise looked on un pitying, magnificent in her contempt. Be sure that this handsome, well-preserved, hardened woman of the world had had her full share of the trouble and the sorrow, the anxiety and the care, that fall to the lot of us all. She must have suffered; but she was one of those who, like the pets of the prize-ring, take their punishment well. The Red Indians, still more than the Spartans, were, and are, our masters in this respect. They yet put their young warriors through a hardening process, compared to which the fag at Winchester or Harrow has a bed of roses to lie on. When hideous pain and ghastly wounds, inflicted by kindred and friends, have been joyously endured, then is the young Sioux, the Apache stripling, thought fit to make his way in a world of cruel foes, hunger, thirst, and snowstorms, on the disputed prairie.

Madame de Lalouve had probably in her some of the stern spirit which prompts those who have greatly endured to demand equal sufferings, stoically borne, on the part of others. At anyrate, a girl's tears were to her contemptible. Those of Sir Pagan's sister were at anyrate quickly dried.

The girl looked up, and spoke now courageously enough: 'I am ready now, Countess, to talk to you. I was foolish—I am but young, you know—but I am ready now.'

Quite clear and sweet was the ring of her fresh young voice, and quite steady were her blue eyes, which looked dauntlessly into those darkling ones of the foreign lady. Many a sad, dull hour had Sir Pagan's almost outlawed sister spent in that dreary sanctuary of hers in Bruton Street; many a pang, keener than we can endure from such causes, but such as women feel to the quick, had she suffered, from neglect, solitude, unbelief; and these things had chafed her nerves and wounded her spirit, until there were times when she felt as if, like some hurt and hunted animal, to crawl into a hole and die there would be a relief. But it was not for nothing that she had in her veins the blood of so many knights, loyal always, and true, dying under shield, often enough, with helmet laced, in the king's cause, never on the rebel's scaffold. Some natural pride in her revolted at the Frenchwoman's affectation of superiority. Let her be the Marchioness or the impostor, Clare or Cora, she was still of the grand Carew race, unequalled in that France of which four-fifths of the aristocracy date from a poor two centuries since, or sail under false colours, or in that semi-barbarous Russia that is Tartar yet.

'I am quite willing to talk to you, Madame, on the subject you have so much at heart,' said Sir Pagan's sister coldly.

'Have you not the subject at heart, Mademoiselle? Is it not your thought by day, your dream by night?' quickly retorted the foreign lady.

'Certainly, I have been very open with you, and have told you, Madame, what your cleverness would have guessed—that it is to me a question of life and death. You are a most accomplished woman of the world,' went on the girl earnestly; 'and besides, circumstances have put into your hands great power for evil or for good. You know'—

'I know—what I know,' ejaculated the foreigner, in a tone and with an arching of the eyebrows, that Mephistopheles himself might have envied.

'And therefore,' went on the girl, 'you can do much to help or hinder, at your choice. Your choice will be determined, I feel sure, by whatever you consider the most profitable to yourself.'

'And I, too, have been thinking,' responded Madame de Lalouve, perfectly impervious to the sarcasm conveyed in the speech of her young hostess; 'and I am sure, dear friend, it will be best for us two to make terms. So let the high contracting parties formulate their stipulations, as we used to say, long ago, at Vienna, St Petersburg, where diplomatists, with cordons and stars upon their padded breasts, sipped their champagne and whispered together in a corner, and settled the affairs of the nations, with a lady or two in council, quicker than fifty of your idiotic Conferences or make-believe Congresses could ever do. Of course I want something—that is so natural. You yourself, *ma belle*, want so very much.'

'What I want is my very own—mine of right,' said the girl coldly.

'And what I want will be my own—will it not, sweet one—by gift of the graceful Marchioness that I shall have been the means of setting in her place?' retorted the foreigner cheerfully. 'Who would deny the right of poor Louise to receive a substantial proof of the gratitude of wealthy Clare? You are like Italy, a geographical expression—pardon the metaphor—before she got our poor dear Emperor to fight for her. But even he did not fight for nothing. I want my Savoy, my Nice—the payment for the battles I am to win, love, on your behalf.—Don't open those astonished eyes so large and round. I am not about to ask you for Castel Vawr or for Leominster House. My salary is more easily paid. The Marquis left to his widow, by will—I have been to the horrid office, and have had it read out to me, in droning official accents, a great great sum of money—money in your Funds, your Consols; no horrid acres, but what sells itself everywhere—like bread.'

'He told me that he had done so; I do not remember the amount,' was the sad, reluctant reply.

'How *bêtes* these Anglaises are!' muttered Madame hissing, between her strong white teeth. 'Well, well, my love, besides foreign securities, there are in your British Consols three hundred thousand pounds. Of these, in the event of success, I ask, for my poor share, a bare third—one hundred thousand; and for this I am willing that your word should be my bond.'

'I give you my word, Madame. If I am acknowledged, legally and socially, as Marchioness of Leominster, as Wilfred's widow, I will gladly pay you over the sum of one hundred thousand pounds,' was the steady answer.

Through her powder, through her paint, a flush of dark-red made itself faintly visible on the face of Madame de Lalouve. 'It is a bagatelle, a flea-bite, a nothing; but it is all I ask,' she said, almost prettily; and really began, so strong is the continental instinct of a bargain, to pity herself because she had not asked more, where consent was so facile.

It was but for a moment that Countess Louise was dazzled by the magnitude of the great ransom that she felt almost within her greedy grasp. These people who in childhood and adolescence hearken to talk of roubles or francs, almost as we do of pounds sterling, and who reverence money because it is the only idol that holds its place above the wreck and riot of revolution and anarchy, are more liable than we are to be bewildered by a vast total of swollen figures. Two millions and a half of francs! Such a swimming-bladder as that, such a life-buoy, would float Louise de Lalouve, born financier as she was, and as proud of her knowledge of the Bourse as of her secret diplomatic information, henceforth above the troubled waters. But she had too much of keen sense not to remember that the victory had yet to be decided.

'All is arranged between us, Miladi,' she said smoothly, but not caressingly. 'I am bound to you, and, you may be sure, by the most binding of all ties, since my interest is wrapped up in yours. It is only a recognised Marchioness of Leominster who can sign me my big cheque for the hundred thousand pounds.' She lingered a little over the words, lovingly, partly as an

amateur might savour the velvet softness of comet-year claret, and partly as if to assure herself that the magnificent bribe was to be adhered to in its completeness.

But Sir Pagan's sister said nothing, and the foreign Countess read her silence rightly.

'I shall work for you, of that be sure,' she said encouragingly. 'All roads—so the maxim is—lead to Rome; but I know one, in this England of yours, that is the surest to travel on, and it is that of Public Opinion. What makes it, who knows? What one hears, what one sees, straws, leaves, blown by the idle wind, a whisper here, a paragraph there. I will help you; I have means to be useful. Foreigner as I am, I can set pens in motion, and tongues, that shall reach her in her palace of pride. Yes, yes; Louise de Lalouve can be useful. Law rules—your courts must judge; but I know what rings in the ears of my Lord Judge as he puts on his superb wig in the robing-room, and what weighs with Messieurs of the jury as they get so awkwardly into that box of theirs—it is Public Opinion. It shall be for you, my love, or I will cut off my right hand.'

She spoke almost fiercely, with a confidence that had in it something arrogant; for indeed there is no vanity so self-sufficing as that of those who pride themselves on a superior or exclusive knowledge of the world. Then she took her leave. 'Adieu—no, rather, *au revoir, belle Marquise*, dearest Lady Leominster,' she said, as she pressed her cold lips on the girl's shrinking cheek, and then, with formal courtesy, withdrew.

Instantly there came a change over the fair face of Sir Pagan's sister, and a strange light, as if of triumph, glittered in her blue eyes. 'Two on my side!' she murmured. 'He so good and true; she so wise, with the wicked wisdom of the serpent. Two on my side! I shall win! Yes, I shall win!'

## THE LAWS OF CHANCE.

BY W. STEADMAN ALDIS.

### IN THREE PARTS.—II. BETTING AND GAMBLING.

IN the last paper, we drew some inferences from the mathematical theory of chances as to the probable fate of a man who perseveringly seeks his fortune at a gambling-table or by means of lotteries.

There is another form of gambling by which many are fascinated, and from which pecuniary gain is often anticipated—the practice, namely, of betting on the result of undecided events. A little investigation will show us that the expectation of permanent profit is as illusory here as in the former case. To take the very simplest case, the game of pitch-and-toss. One person whom we will call A tosses up a coin. A second person, B, calls out 'head' or 'tail,' as the whim may seize him. If his prediction prove right, A has to pay to B a certain sum; and if wrong, B has to pay the same sum to A. The mathematical chances of these two events are equal; and therefore, in the long-run, supposing the funds of both hold out, A will have to pay to B just as much as B pays to A. The net result in this, which is the most favourable case, will not be therefore, eminently profitable to either side;

and, as we shall presently see, in all probability the actual event will be ruin to one.

The same thing holds good when the bet is not what is called an even one, as, for instance, when a person bets five to one against a certain horse winning a race. If the odds are what may, for want of a better term, be called fair, this must mean, that in the opinion of qualified judges, this horse would win one out of every six similar races in which it was engaged and lose the remaining five. Our gambler will therefore, if he never gives more than the mathematical value of his expectation of profit, lose on an average one pound five times for every once that he gains five pounds; and, as in the former examples, if his capital be sufficiently large to pay whenever he loses, in the long-run he will neither lose nor gain.

There is, however, always hanging over a persistent gamester the possibility, or rather the certainty, of a run of ill-luck. Perseverance in gambling always meets with its reward. Sooner or later, the whole capital of the player must disappear and go into other hands; and the larger the stakes for which he plays, the more quickly will this catastrophe arrive. A gambler who leaves off with as much money as he began with is, both according to experience and the mathematical laws of probability, a very *rara avis in terris* indeed.

We have spoken of the odds being what are called 'fair.' This term requires a little consideration. The only possibility of a bet being fair is, that the values of the expectation of the two betters shall be equal; that is, that the amounts staked are inversely proportional to the chance of winning. This will probably be conceded by all who have followed the reasoning of the former paper. There is no other possibility of a fair bet, because if either party to the transaction stake a higher amount than is necessary to insure this equality, he at least is defrauded, whatever may be the case with the other one. In the long-run he must lose, and the bet cannot be in any sense fair to him.

It is, however, open to question whether such a thing as a fair bet is a possibility at all. Suppose that two persons, one having a hundred pounds and the other only eighty, bet on the toss of a penny, and each stakes a pound. The mathematical values of their expectation of gain are equal; but the moral values are not. It is an ethical principle that the moral quality of a transaction can be estimated by considering the effect of such a transaction repeated so often as to become a general practice; and we may fairly apply this principle to the case in question. We have seen that the mathematical theory proves that there is a probability, amounting to certainty if the play go on long enough, that in a sufficiently large number of throws there will occur a run of ill-luck which will diminish the capital of the player by any given multiple of the stake. The probability of a run of ill-luck to the extent of eighty pounds, is much greater than that of a run to the extent of a hundred. Hence the player with the smaller capital is exposed to a much greater risk of ruin than the other; and from that point of view, even the equality of the stakes fails to insure the fairness of the bet.

The moral value of a man's expectation of a

future good as distinguished from its mathematical value depends very much on the extent of his available capital. This is a fact recognised in ordinary commercial transactions. A man with a large capital may sometimes wisely and rightly embark in a hazardous speculation which it would be wrong for him even to think of if his wealth were smaller; and similarly, if two persons with unequal resources engage in a betting transaction, the odds which it might be prudent for one to give may be very unsafe for the other to accept.

Even, however, if the original capitals be equal and the odds mathematically fair, the result of a bet is on the whole injurious. Suppose each person has one hundred pounds, and they each stake one pound. As the result, one person has a hundred and one pounds, and the other has only ninety-nine. Few will doubt that the loss of the one pound is a more serious injury to the one man, than the gain of it is an advantage to the other. Looked at from the view of the greatest happiness of the greatest number, the net result of the transaction is a loss.

The objection was once made to the above views, by a cynical friend of the writer, that if one of the gamblers loses all he has, some one else must win it, and that he would endeavour to be the same one else. It is true, as we have seen, that the richer of two players has a good chance of ruining the other; but any person persevering in betting must remember that he is practically pitted not against one particular man but against the whole community of gamblers. Each person will have his turn of success; but each person will also have his turn of ruin. The wealth of the whole body is not increased; the effect of gambling upon it is somewhat like that of a storm of wind on the water contained in a shallow pool. Waves sweep over the surface, which raise the level of the water at some points for an instant; but as certainly ebb away immediately, and lower as much as they previously raised it. With all the energy they exhibit, they make no permanent addition at any point to the contents of the pond.

It is sometimes, however, insinuated, rather than alleged, that the feverish distribution of money effected by gambling is beneficial to the community in the same way as the exchanges in a commercial transaction. It is certain that an enormous amount of time, which is money, is wasted by the artisans of many of our large manufacturing towns on gambling in connection with boat-races, horse-races, and other exciting amusements. In the streets of Newcastle, for instance, it is a very common thing to find the pavements blocked up and the trade of the shopkeepers in certain quarters temporarily destroyed by crowds of men waiting to hear the decision of bets they have made on different sporting events. Competent witnesses estimate that the loss to the national wealth during a year from the mere stoppage of factories and shops owing to practices of this kind must be reckoned in millions of pounds. The circulation of the sportsmen's money must be shown to produce some very great advantage, before we can allow that it counterbalances this obvious evil. The assumption, however, that the mere change of the hands

which hold the money is a gain to the nation, is absolutely fallacious, as will be seen when we come to consider the real benefits obtained by exchanges in commerce.

A ship takes coals and iron, say from the Tyne to China, and brings back tea to Newcastle. The coals, iron, and tea are each made more valuable by the exchange. They have each been removed from a place where they were not wanted to a place where they are useful. The world is a gainer by the transaction; and the merchant who effects it is allowed to be a benefactor, and receives his share of the profit. In the transfer of money effected in a bet there is nothing analogous to this. There is no useful labour expended by either party; the money is in no better position after the bet than before; and the transfer may too often be described as merely an exchange of money from the pocket of a fool into that of a knave, with a contingent reversion to the till of a publican.

It is running rather far perhaps from the mathematical discussions with which we started to add, that while the material influence of betting and gambling on a community is thus injurious and wasteful, the moral influence is even worse. The two things, however, go together. The *raison d'être* of betting is a desire to get money without giving a fair equivalent; to get a fair day's wage without giving a fair day's work. As a matter of fact, a persistent gambler soon loses all regard for the rights and claims of those with whom he plays. The writer was much struck with an indication of the moral tone of what may be called the gambling world, which came under his notice some years ago. There was a great race in America, for the purpose of contending in which a crew of Tyneside boatmen had crossed the Atlantic. During the heat of the race, one of the English oarsmen fell back exhausted and died. The writer found that among the sporting community in Newcastle there was an almost universal belief that the man had been drugged by persons whose pecuniary interests would have suffered had the English boat won. Probably the belief was unfounded; but it showed plainly that gambling-men, who presumably judged the moral level of their fellows across the ocean from their own, fully believed that the desire to win a bet would be a sufficient inducement to run the risk of committing a murder.

It is needless to enlarge on the fact that the same spirit which leads men to wish to defraud their neighbour by winning a bet from him—and that winning money by bets is essentially fraudulent follows from what has been said—may also lead men to practise similar frauds in trade. It is the spirit of gambling which causes that

Chalk and alum and plaster  
Are sold to the poor for bread,

as well as creates Companies professing to give their shareholders a fortune for almost nothing. We may add that it is the same spirit that induces the unfortunate victims to invest their hard-earned money in these bubble speculations. There is perhaps no one practice that has more ruinous consequences to us as a nation than this of gambling; and there can be no hesitation in saying that any usages which tend

to promote it ought to be very carefully watched and guarded against. The few shillings, for instance, which a young man may lose at his club or an evening party are sometimes a matter of importance even to a person in polite society; while the gain of an equal amount has sometimes, and not rarely, proved the impetus which has started him on a career whose termination has been theft or forgery. The amusements of our country are not too numerous, and it is a serious injury to the nation when hours of relaxation become opportunities for evil, and when such games as whist and billiards are made—as is almost universally the case—vehicles for heavy gambling. They are games which are often of great value, imparting lessons of watchfulness and judgment, quickness of eye and quickness of decision; and it is a pity that their use should be injured and their extension limited by their connection with a practice which all allow to be needless, and most feel to be hurtful.

Since the writer first gave special attention to this subject, evidences of the enormous extent to which the practice of gambling, in one shape or another, has undermined our national prosperity and corrupted our national morality, have continually been coming to his notice. The columns of the daily newspapers continually report cases of ruin, material and moral, due to indulgence in this vice. The Reports of various Parliamentary Commissions on the laws relating to gambling afford ample grounds for the strongest language that can be used in regard to the evil effects of the practice. Mathematical reasoning does not more surely demonstrate that gambling is wholly unprofitable, and almost certainly ruinous to the purse, than experience shows it to be destructive of purity and uprightness in the heart.

The mathematical theory of chance has thus led us to a complete refutation of the idea that the toss of a die or the rolling of the ball at a gaming-table can lead to fortune. In another paper we hope to examine some of the inferences to be deduced from that theory in relation to another and opposite practice—that of insurance.

#### MORE ARTFUL DODGES.

In contrast to these petty though elaborate strivings to 'crib' a grain or two of gold—by the process described in our first paper, No. 1011—what tremendous, magnificent roguery is that which has prompted men to 'salt' worthless tracts of land with diamonds, rubies, emeralds, gold, and silver, in order to induce mining speculators to purchase it in lots, for every one of which a sum has been received which has covered a hundredfold the value of the precious seed expended on the entire area. Not less remarkable than the knavery of the sharpers is the stupidity which has been exhibited by dupes, who have swallowed greedily the hook baited with a most palpable cheat—as in certain cases where metals which never occur pure in nature have been found sparkling on the surface in unalloyed masses! A silver nugget picked up on a salted district in America revealed a startling phenomenon in the unobliterated letters 'TED' upon it, a *lusus* afterwards explained by



the circumstance that coins bearing the legend 'United States of America' had been melted down to supply the dressing for this favoured land!

But though our annals of artfulness can boast of mourning households where coffins have incased stolen plate instead of corpses, and of particular racehorses painted to resemble certain others, and sent on long journeys, in order that intending backers might be misled, we cannot, as a nation, dispute the palm of trickery, mental or manipulative, with some of the oriental races, whose merit undoubtedly raises them to that bad eminence. Possibly, in the special branch of horse-stealing, the South American Indian might receive an equal certificate of proficiency with the Arab; but as bold and expert general thieves, the Hindus and Chinese stand unrivalled. A Chinaman has been known to seize a man's finger and cut it clean off in the midst of a crowd, to obtain possession of a ring, and escape detection. This immunity is due, perhaps, to the great resemblance which the faces of a Chinese mob bear to one another in European eyes, rendering individuals absolutely indistinguishable at first; as well as to an ingenious artifice for disguising a broad-bladed knife in the semblance of a closed fan, such as all Chinese carry. Hindus will swim or float cautiously along a river at dusk with an old basket or empty gourd over the head, whirling and twirling lazily with every eddy, and braving the crocodiles, to gain an *entrée* to the bungalow they desire to plunder, under the very nose of its proprietor. The writer once saw a coolie immigrant in Guiana, a field-hand on one of the sugar-plantations, towing a log of wood along one of the muddy canals or trenches which intersect the cane-pieces. He passed the manager on the path, salaamed composedly, and was plodding quietly on towards the village, when the rope hitched in a stake on the bank, causing the log to tilt up, and disclosing the fact that it was ballasted with something underneath. 'Something' proved to be a coffee-pot and various other silver utensils which had been purloined from the breakfast-table laid in the veranda of the house to await our return. In a few hours, the whole would doubtless have been converted into bangles, anklets, and earrings; for the poor Indian's untutored mind is just as keenly alive to the advantages which attend the development of specie unlawfully acquired, as that of Mr Fagin or any other metropolitan 'fence.'

Two natives entered the emporium of a Moham-medan dealer in one of the Calcutta bazaars and purchased a valuable shawl. They hesitated to pay for it, as it did not appear convenient for them to carry it away just then; but the dealer, an avaricious old scoundrel, fearful of losing his bargain, persuaded them to part with the money and leave the shawl, by giving them a receipt for the amount, which was duly witnessed by one of the police. Scarcely had the buyers departed, when an English sailor came in, reckless, spend-thrift, forcible in expression, three parts drunk, and otherwise characteristic of Jack ashore. The follower of the Prophet spoke a little Inglesish, as he spoke and did everything else which tended to the transference of rupees or annas from other pockets to his own, and was not long in finding out that Jack wanted something to take home

as a present to black-eyed Susan. Unfortunately, the faithful mariner's roving eye alighted on the shawl which had just been sold; and with the obstinacy peculiar to his class and condition, he insisted on having that and no other. In vain the merchant told him it was sold. Very well; he would walk down the bazaar and try elsewhere. An exorbitant sum was named as the price. Jack did not care; he had plenty of money. It would cost double that, he was told, to get it back from those to whom it now belonged. Jack was willing to pay for all. There is no doubt that the Moslem's conscience would have allowed him to sell the shawl readily enough; but the purchasers had his receipt, and even though he returned the money, the transaction might bring him under the strong arm of the law, for which he entertained an exaggerated respect. Unwilling to lose the chance of so much profit, he bade the sailor return at a certain hour, telling him he should then have the garment he so greatly coveted.

It was just as he feared. When the dusky customers arrived, they refused to accept their money back again, flourished the receipt, and threatened to appeal to the judge if their property were not at once handed over to them. A small bribe, offered as an inducement to them to forego their bargain, had to be increased to a large one before it produced any effect; and when one wavered, his companion held firm. At last the *douceur* was considerable enough to satisfy both, and was handed over to them in addition to their original purchase-money. The receipt was torn up, and the merchant found himself once more in legal possession of the shawl, with a fair though greatly diminished margin left for profit. He hurried to the door to await the return of the extravagant seaman; and was just in time to see that ingenious son of Neptune, as sober as a lord chief-justice, dividing the proceeds of the little dodge with his two Lascar shipmates at the end of the narrow street.

A singular accident occurred during the time of the Great Exhibition of 1851, which affords a curious converse to the principle, or want of principle, of artful dodges in general. A well-known barrister, still living, who was present in one of the throngs that attended the opening days at the building, felt a fumbling in the region of his watch-pocket, and looking down, saw a man's hand swiftly retreating. He made a snatch at the wrist; but the thief eluded his grasp, dropped the watch, and made good his escape. The barrister contrived to pick up the timepiece before it was trodden under foot, when, to his astonishment, he recognised at a glance, although the face was shattered by the fall, that it was not his own!—which, indeed, was reposing safe and uninjured in his waistcoat-pocket all the time! He at once proclaimed his discovery, as it was obvious that the loss must have been incurred by one of the immediate bystanders; but in spite of the full publicity which the police advertisements and newspaper reports gave to the matter subsequently, no owner ever established his claim to the watch, which rests under a glass case in the finder's drawing-room to this day, its fractured countenance provoking inquiries from all who have not

heard the tale that hangs thereby. Valuable rings have been discovered in new gloves, left there inadvertently by people who had previously tried them on, and who probably had sought high and low for the missing jewel, before they abandoned the quest in despair, never to see their property again. Stranger than all is the waif picked up in the Assyrian bear's den at the Zoological Gardens—three-fourths of a human finger, belonging to somebody who must have been too much ashamed of his folly in disregarding all warnings, to make his loss known to the authorities.

It is often said that we manufacture criminals here by the special facilities which we hold out to them; and it is easy to suppose that the fashion of ladies' pockets and the wearing of exposed watch-guards must offer an irresistible temptation to the budding street-thief; while the habit of leaving a card-basket on the hall-table, within arm's-reach of the door, certainly provides the Alsatian of higher degree with munitions of the warfare he wages upon society. Be that as it may, peculative crime has never reached such a pitch of definite organisation in any age as it presents now. The police succeeded in unearthing a mystery not long ago which opens up a vista for contemplation by no means reassuring. The clue was not strong enough in this instance to bring legal conviction home to the culprit; but of his guilt there was no moral doubt, nor is there any reason to believe that the case was unique. A gentleman—one who fully deserved the conventional title in every sense, as far as appearances are concerned—took up his residence in a fashionable watering-place. He was well connected, brought good introductions with him, had been a great traveller, represented himself as having inherited a moderate competence from a deceased relative, and being a pleasant, agreeable companion, soon established himself on terms of intimacy with most of the residents, and was received with great hospitality by the leading families. The man so far was no impostor. His letters of introduction were genuine; and it subsequently transpired that all the information respecting himself that he had so unreservedly given was literally true, save and except the amount of the legacy from which his income was derived. After a little while, a series of burglaries at the houses of all the local magnates took place, under circumstances so inexplicable, that the detectives could only come to the conclusion that they had been committed by the servants, some of whom were arrested. Nobody dreamed for a moment of associating the new-comer with such events—why should they? since he was in bed and probably fast asleep while the depredators were at their work. Nevertheless, this engaging individual decamped in hot haste one morning on receipt of a telegram, and although the police officers were making warm inquiries for him a few hours later, he was seen on that coast no more. Beautifully executed plans of the pillaged houses, inside and out, with maps of the roads and byways by which they could be reached, all sealed to the inch, together with most minute details of the domestic arrangements pertaining to the different households, had been discovered in the possession of a London gang to whom some of the stolen property was traced; and the

writing was identified as that of the frequent and favoured guest. Thus, there had been no loitering about of suspicious characters. Armed with their chart and guide-book, the burglars could delay their arrival in the neighbourhood until after nightfall, proceed to the scene of action with the confidence of old inhabitants, do the job, and be clear away again before morning, while the gentlemanly draughtsman would receive his commission a few days afterwards.

The land of wooden nutmegs and of oats manufactured from 'shoe-pegs sharpened at the other end,' might supply us with a store of anecdotes anent the dodges which the wit of Cousin Jonathan has devised with a view to bring grist, directly or indirectly, to the mill, sufficient to fill a goodly volume. Space fails for more than one—here offered, by way of conclusion, as an example of the sheer force of logic.

A tall 'down-east' entered a grocery or general store in a village of one of the Western States and asked for a ten-cent cake, with which he was supplied. 'Hold on, though!' he said meditatively, pausing in the act of drawing the money from his pocket. 'I b'leeve I don't want this cake, now. Guess I'll have a ten-cent nip of Bourbon instead.'

The cake was taken back, and the liquor handed to the customer, who drank it at once, and walked out.

'Hi!' shouted the storekeeper; 'here, I say, mister; you haven't paid.'

'Paid for what, squire?' asked the imperturbable Yankee, looking round.

'You haven't paid for your liquor.'

'I give you a ten-cent cake for it, didn't I?'

'Yes; but you haven't paid for the cake.'

'Well, you've got the cake!'

Puzzled, though not convinced, by this startling position, the storekeeper hesitated for a moment, during which the logician sauntered off.

## MISS GARSTON'S CASE.

### IN FIVE CHAPTERS.—CHAPTER III.

'You must think it strange,' said my visitor, 'that I should wish to reveal to the ears of a person I do not know, what even a bold man would fear to confide to an intimate friend. But, sir, in some terrible crises of life, one must do unusual things, or connive with evil-doers. Do you understand me?'

'I do not, indeed,' I replied.

The man looked at me uneasily, and fidgeted with his umbrella. 'You see,' he continued nervously, 'I am a bit shaken in my own health since Mr Garston died, and am easily put out. But I must tell somebody what ought to be known, if only for inquiry's sake. Mr Lamport has been drawing Miss Garston's money out of the firm, and I don't think she knows anything about it. If she dies, you know, it will belong to her next of kin. Mr Lamport is infatuated with a scheme for gold-mining in America. He has sunk his whole means in it; and I fear he is appropriating Miss Garston's fortune now. I am the cashier of the firm, and know many things that are secrets to the world.'

'Well, but why should you divulge such matters to me?' I asked. 'I am not a man of

business. I know nothing of Miss Garston, except as her doctor. What could I do to prevent Mr Lampport from speculating with Miss Garston's money? I have no authority to stop him.'

'True, true, sir; but you can tell Miss Garston what is going on.'

'It would be almost a crime to distress her with worldly affairs in her present state. She is, I may tell you, sick unto death.'

'Do you think she will not get better?' demanded the man, with a despairing voice.

'I am not her Maker,' I returned, 'and therefore do not hold her life. Speaking as a medical man, I say she is in a most critical condition.'

'What ails her, sir?'

'That I cannot tell you.'

Something in my face or in the inflection of my voice struck my visitor. He looked at me inquiringly, and said with a low tone: 'Does Mr Lampport see her often?'

'I think, twice or thrice a day. He is very much distressed at her illness.—By the way, has Miss Garston always been on good terms with her guardian?'

'That's it, sir,' cried my visitor hastily. 'Mr Lampport is *not* her guardian. Mr Garston died without making a will. Now I have told you part of the secret.'

My curiosity was now thoroughly roused; and the interview began to assume an importance that I had not anticipated when I consented to listen to my visitor's revelations. I had thought him one of those troublesome bores that medical men often have to endure.

'Explain what you know of this extraordinary affair,' I said eagerly.

'I will, sir, and as briefly as possible, for time presses. I must be at my post before the bank closes. Eight months ago, Edgar Garston was a healthy, happy, prosperous man. His daughter was one of the finest of our young ladies. Any one would have taken a lease of their lives; everybody would have envied their fortunes. Mrs Garston had died many years before, by a fall from her horse'—

'Stop!' I interrupted. 'Are you sure of this? Did she not die of consumption?'

'No; by a fall from her horse. Well, that terrible misfortune made father and daughter nearer and dearer to each other. I do not think such tender affection ever was felt before by father and child. They were inseparable companions, except in business hours.'

'Eight months ago, a change began. Mr Lampport was on the verge of ruin through this gold-mining. It came out by his taking a large sum of money belonging to one of the clients of the firm and applying it to his own use. There was a frightful scene in the office when the discovery was made; for Mr Garston was the soul of uprightness. I overheard it. My office is adjoining the private office. I thought the partners would have fought, Mr Garston was so enraged; and Mr Lampport was quite maddened by his reproaches and his own desperate condition. Besides, as the confidential servant and cashier, I was bound to know all about it. Ah, a painful time, that! Well, the matter was kept secret; the money was repaid to our client, and Mr Garston made the sacrifice. But he determined to break the partnership. Nor was that difficult;

for the deed was nearly at its term. Twenty years had my employers been together, and for periods of ten years had their agreement been dated. At the end of the current year, it would lapse; and so Mr Garston resolved that he would draw out and retire. He was a generous, forgiving man, and attached to Mr Lampport by lifelong friendship.

'After his passion had subsided and matters were smoothed down, Mr Garston proposed that Mr Lampport should take the business to himself, upon paying a stipulated sum. Now, Mr Garston did not know that his partner was absolutely ruined. He supposed that he was embarrassed by over-investment in the mine; for Mr Lampport brought evidence proving that vast quantities of gold had been got, and that an endless mass of ore remained to be worked. From what I have learned since, these statements and figures were fictions, and were prepared by the schemers who were plundering the shareholders. Mr Lampport was himself deceived. But a change came over Mr Lampport from the day Mr Garston determined to dissolve the firm. He became moody and taciturn. News from the mine added to his disturbed condition; more money was wanted, or the whole enterprise would pass into other hands.

'A little over six months ago, I left the two partners together one evening. They were going into particulars connected with the coming dissolution, and I heard Mr Garston say to his coachman, who was leaving the room as I passed, that he would be detained until late, and would go home in a cab. Mr Lampport had been in a very curious humour all day, and seemed at times to be walking about in a dream. He had grown quite nervous of late, and was, in short, a changed man. I left the office about half-past four; and was just getting out of the train near my house, when I remembered that I had left a parcel upon my desk that I should have taken home. It contained something for my children, and was needed for an evening party they were going to. I had, therefore, to return by a town-train. It chimed half-past six as I mounted the stairs going to my room. I must tell you that there are two entrances to the office, by different corridors; for it is situated at a corner of the building. The place was deserted, business being long over in most establishments. My room was next to the principals'; and as I opened the door, I heard an angry altercation going on. Indeed, it appeared as if a repetition of the old quarrel had begun. Mr Garston's voice came across my ears saying: "I will not do it. You are mad to throw your money away as you have been doing. I will not help you. Perish by yourself."—"Let the partnership last six months longer, then," demanded Mr Lampport. "I cannot carry on this new business yet; and if we stop, all is over with me."—"I will not go on for six days," returned Mr Garston, stamping his foot. "You have robbed me again. You are a villain, Lampport!"—"Then take the consequence of driving a man to desperation," exclaimed Mr Lampport.

'A heavy fall followed this, then silence. I was horrified, and unable to stir. But the sensation passed in a second or two; and I was just going to rush into the partners' room, when a sharp crack, like a whip strongly lashed, burst upon my ears.

I could not guess what it was ; and became again riveted to the floor. The sound of a swiftly passing foot aroused me. I ran to the door of the private office, which I must explain, opened into mine, as well as into the farther corridor. It was locked on the inside. I hurried round to the other entrance and passed in. What a sight met my eyes ! Mr Garston was lying upon the floor, and from a small hole in his right temple a stream of blood was fast flowing. A faint cloud of smoke was rolling towards the window. I gave forth a cry of anguish and consternation, and stooped to raise my master. A pistol fell from his hand ! Good heavens ! had he killed *himself* ?

"You cannot understand the shock this tragedy gave to me. I believe I fainted. At anyrate, when I lifted up my eyes again, there were two policemen and Mr Lampport standing beside the dead man and myself. It was like one of those hideous nightmares where the most extraordinary changes follow. Mr Lampport was excited to a degree that I have never witnessed in any other man. I was wrung with sorrow and astonishment ; but Mr Lampport's behaviour drew me from my own feelings, and compelled me to remark his frantic grief. He wept like a child, and trembled as if in a fever. He could not approach the body of his late partner, and kept his eyes averted while he spoke to the policemen. When I became a little calmer, and could comprehend what was being said, I found that Mr Lampport had brought in the policemen to see a gentleman that had shot himself. "What do you think he did it for?" asked one of the men, a simple-looking fellow. Mr Lampport answered : "I cannot tell you ; unless I guess that money had something to do with it."—"But who is this gentleman?" asked the other policeman, suddenly recognising the fact of my presence.—"Oh, this is our cashier," replied Mr Lampport, looking at me in a strange manner.—"How did you come here, Mr Sleigh? I thought you had left the office hours ago."

"I explained as briefly as possible what had brought me back, and was going to ask Mr Lampport how the frightful tragedy had come about, when he abruptly turned to the policemen and demanded what was to be done. This had the effect of putting an end to my questions. One of the policemen went away to report the matter to his superiors ; the other remained in the room. Mr Lampport bade me follow him into the general office. He there questioned me again upon my return to the office, and asked how I had found out that Mr Garston had shot himself. In my simplicity, I told him all that I had heard. He listened with ghastly aspect to my recital ; and when I had done, and began to ask him the meaning of the awful death of Mr Garston, he changed his manner, and assured me that I was quite mistaken. There had been no quarrel ; nay, no conversation. He had found Mr Garston bleeding on the floor upon entering the private office, and had run out to bring in assistance.

"I was confounded at this ; and so confused and stunned was I by the dreadful event that had happened, that I doubted the reliability on my own memory. I stared like an imbecile at my employer. He watched me keenly, and upon my repeating that I could not be mistaken, he said menacingly : "Beware, Mr Sleigh ! This is

a most serious affair. I would advise you to be careful what you say. People might suppose that you had murdered him !"

"I almost swooned at the frightful possibility of such a charge. "Here, sit down," said Mr Lampport, looking at me suspiciously. "Your reappearance at such a moment and for such a flimsy purpose, bears, let me tell you, a very suspicious interpretation. I do not say you *have* killed my poor friend ;" here his voice sank ; "but I tell you, that if you depose to the police what you have just told me, you will be locked up. Ay, Mr Sleigh, I will myself recommend your arrest !"

"I was now thoroughly alarmed, and I asked in a subdued manner what I was to do. "Keep to the plain facts, Mr Sleigh. Say that you heard the report of a pistol, and upon entering the private office, found Mr Garston dead." Mr Lampport watched me sharply for a while ; and abruptly said : "Where was the pistol?"—"In his hand."—"That will do, Mr Sleigh !" cried he, almost triumphantly, and with a sigh of relief. "You can swear to that?"—"Yes ; I am sure of that."—"Very good. Now, be careful, my good fellow. Remember your wife and family ! You might get into a dreadful dilemma. I assure you, many a man has been hanged upon less evidence than there is against you !"

"The appalling incidents of the past hour, my weak health, for I am not a strong man, and the terror of being accused of the murder, so affected me, that I became utterly unnerved.

"I reached home that night more dead than alive. Indeed, Mr Lampport had to accompany me from the police-station, after I had given my version of finding Mr Garston. The instinct of self-preservation enabled me to confine my statements to the facts of hearing the report of a pistol and the finding of Mr Garston bleeding on the floor with the pistol in his hand.

"I repeated this at the coroner's inquest ; and I was so ill after giving my evidence, that I had to return home, where I remained for several weeks. A thousand times since, I have regretted that I did not tell all that I knew ; for each day I am more convinced that Mr Garston was murdered, and that his partner committed the deed."

I had sat in mute amazement during the relation of the cashier's story. When he concluded, I was still more confounded ; for there now arose the question of what to do? If Mr Lampport was guilty of his partner's death, he must be punished. But how could I set the machinery of justice in motion? It was not my affair. This poor craven must do *his* duty. Why, in the name of all that is righteous, had he made me his confidant?

"I do not see any relevancy in your telling me this dreadful tale," I said, after pondering a few moments. "You should go to the police. Why have you divulged what you have told, to me, of all men in the world?"

The cashier looked at me : "Because I believe that Mr Lampport is again committing murder."

I jumped from my chair as if shot. "Upon whom?" I cried ; while one of those electric revelations, which burst upon us sometimes, answered my question before it had passed the cashier's lips.



'Miss Garston!'

'Oh, horrible, most horrible!' I groaned. 'Fool, dolt, that I am, not to have seen before this whose hand it was that has been frustrating my efforts.—Sir,' I cried in a frenzy of excitement, 'I fear you have come too late!'

I paced the room in agony, thinking furiously over the means to arrest the machinations of the foulest of traitors, and at the same time how to bring him to justice. Presently, I felt the imperative need of caution, and the danger of precipitate action, both for Miss Garston's sake and my own reputation.

'What proof do you give me of this further charge against Mr Lampport?' I asked, after I had come to a speedy and final review of the situation of things.

'This!' answered the cashier, putting a phial before me.

I opened it eagerly and smelt it, and was struck with the same odour which I had remarked in the tuberoses. It had the same effect also; as I continued to inhale it, a heavy languor seemed to creep over my brain.

'Where did you get this?' I demanded, putting in the cork and placing the phial upon the table.

'I took it from Mr Lampport's desk last night. A suspicious man finds sinister hints in every act of the object he suspects. I connected the visits of an old Italian to Mr Lampport, with some nefarious scheme; for he has gone from bad to worse during the past few months. I had the Italian watched by my son; and he found that the man was a sort of herbalist, living in a low part of the town. Inquiry proved that he had a dubious reputation. I found, from what I learned of the health of Miss Garston, that her condition became worse after this Italian began to call upon my employer. You may perhaps understand that I felt the deepest interest in the poor young lady. The housekeeper at Mr Lampport's residence is a friend of my wife's, and so we have been kept informed of what has been going on. But it was only when you were called in to see Miss Garston, that her illness became very alarming. Somehow, she has got worse since; and fearing, from what I heard yesterday, that her life was in danger, I found myself compelled to call upon you. One thing has led to another; and now you know how awfully my destiny is mingled with that of your patient.'

'Does Mr Lampport know that this phial has been removed?' I asked.

'No; it came last night after he had gone. The Italian would not have left it, but that I said Mr Lampport might return. He did not. I ventured to do a bold thing. I took it, hoping that it might give some clue.'

'I will have it analysed,' I said, 'and make experiments with it myself also. But I must first return to Miss Garston, whom I left asleep. Call for me again this evening; and we will have a further conference upon this dangerous man's doings, and concert means for dealing with him.'

We separated.

I hurried to my patient, who lay in a state of extreme exhaustion. Her mind appeared to wander; and I feared that she had sunk too low

for recovery. I was terribly perplexed. So weak was she, that I feared if I introduced a strange doctor, the agitation might be fatal to her. Yet the overwhelming responsibility of acting by myself in such a crisis staggered me. I was so young, so inexperienced in worldly devices, that I trembled at the alternatives before me. I could not contain the secret longer; and leaving my patient in the charge of the housekeeper, with instructions to apply restoratives if Miss Garston grew worse, and with orders to Mr Lampport's coachman to have all ready for bringing me quickly, if I should be wanted, I hastened home, to consult the only counsellor that I dared confide in at the momentous juncture. My mother was a clear-headed, brave woman, with much resource in difficulty, and with that alert perception of the right thing to do in an emergency, which make some women remarkable.

She was not so confounded by my revelations as I expected. She remained cool and thoughtful to the end, wasting no time in needless ejaculations. I was astonished, and not a little comforted, to find such help as she afforded by her criticism and her recommendations. Together, we planned a scheme to meet the emergency—to do all that was possible to save Miss Garston's life, and to obtain proofs of Mr Lampport's criminality, if criminal he were. My mother was somewhat unassured of the cashier's veracity in some points, thinking that he might be mistaken. Still, she believed that Mr Lampport was guilty in a certain degree.

I returned to Mr Lampport's residence, greatly relieved in my mind, and far more capable of doing my duty than in my previous agitated state. My patient continued in the same deep languor. Towards afternoon she rallied a little. I applied a new remedy. It had a speedy and encouraging effect. But it proved that the contents of the phial were poison; for my remedy was an antidote to what I judged it contained. I was only able as yet to form a very imperfect opinion of the noxious ingredients; but I was satisfied that I was upon the right track.

When Mr Lampport came home at six o'clock, I was able to report a decided change for the better in my patient. He assumed an air of joy at the news; but it soon gave place to an expression of anxiety. We dined together, and I studied my host with an intensity which, had he observed it, must have rendered him far from comfortable.

## PAVEMENT PORTRAITS.

### A CITY WOMAN.

'WOMAN is the lesser man,' sings Tennyson through the mouth of the jilted lover of *Locksley Hall*. She may be; but I doubt whether Amy's cousin would have been allowed to be so dogmatic in this utterance if the poet-laureate had ever seen this lady of, let us say, Little Lombard Court. Daily, for six days in the week, a faded green omnibus plying between Bow and the Bank bears to the City this business lady. Every day, punctually at 9.45 A.M., when the door of the omnibus in question is opened by the conductor at its journey's end, a plump leg, clothed in a black-

cloth boot and spotless white stocking, may be seen to descend carefully from the straw-covered floor of the vehicle on to the step behind, followed by another leg of precisely similar proportions and covering; and when both legs are firmly on the step, the black bombazine drapery of their owner falls quickly over their momentarily exposed graces, and their proprietor lands safely on the road. Here then stands exposed to view the City Woman.

A curious little figure it is, and well worth looking at for a moment. The two things that mostly strike one about it are its solidity and its blackness. So firmly does the City Woman stand on the ground, as she waits for a moment for her change from the conductor, that she looks as if she were rooted there, and would require picks and spades to effect her removal; and so black are her garments, that they cast quite a gloom around her. One would think that her life was passed at the edge of the grave, and that she buried her nearest and dearest every day.

Slowly and methodically does this dark 'portrait' move away to its daily work. Along Cornhill it goes, and runs to earth, as it were, up one of the numerous courts on the right hand side of that thoroughfare, looking eastward. No sooner, however, has the dignified dark one turned out of the very public way of Cornhill, than some of her solemn deportment seems to go from her, and the wheeling gait breaks into quite a little trot as she draws near to her goal. This is a curious old-fashioned shop, with a front of many panes of glass, all whitened, to prevent the interior of the establishment being seen; and with a quaint little narrow doorway, through which the City Woman can only just pass without rumpling her sable garments. There is no name over the shop-front; there is no occasion for that, for the place is as well known in the City as the Monument itself. It is the old-established luncheon-house of Tupp, to which the sombre 'portrait' has led us, and that solid female is its present proprietor.

Who Tupp was, nobody knows; but he—if it was a he—must long since have joined the majority, for the almost obliterated inscription, 'Established in 1768,' appears in faded brown paint as a legend over the mantel-piece in the principal of the two rooms in which the business is conducted. No one cares to know about the passed-away Tupp. It is sufficient that the present owner of the place is called 'Mrs Tupp' by all her customers, and has been so called by all who have known the shop for how many years it would be ungallant to record.

Three handmaidens of remarkably clean appearance and quiet demeanour receive their mistress with respectful and undemonstrative greeting, and then resume their interrupted occupation of cutting up loaves of bread and filling baskets with the slices; making sandwiches from a splendid York ham and nice-looking bread and butter;

peeling hard-boiled eggs; slicing a prime Cheshire cheese; dividing pork pies into quarters, and piling cold sausages into pyramids; for at Tupp's, nothing more in the way of eatables than these things can be procured. The original Tupp seems to have made an irrevocable law for the conduct of this establishment, that the line was to be drawn at cold sausages and pork pies, and within this line the present Tupp rigidly keeps. But the glory of Tupp's is its beer. Not in all London is such ale or stout to be found; and in this circumstance lies the secret of the success and popularity of the place; for that it is successful and popular, we shall presently see.

Divested of her black shawl and bonnet, the respected proprietress, after a short absence, reappears among her handmaidens. She looks, perhaps, even more curious in her business habiliments than she did when enveloped in the concealing folds of her walking attire. The first thing that arrests the observer's attention on beholding Mrs Tupp divested of her outer coverings, is an extraordinary black wig. Brushed almost to reflective shininess, this headgear adorns a dome-like forehead, and passes away in two broad Day-and-Martin-like streams, one over each ear, into an immense sort of reservoir at the back of her head.

There are no eyebrows on Mrs Tupp's face; but this deficiency is made up for by the broad rim of a pair of spectacles firmly fixed on the bridge of her nose; for were eyebrows worn by Mrs Tupp, it is doubtful whether they would be visible behind such a screen as this rim makes. Her manner, like her *menu*, is cold. She encourages no familiarity on the part of her customers, amongst whom there is a diversity of opinion as to whether she is maid or wife or widow. She moves like a spectacled sphinx among her plates and glasses; and the riddle of her life, if asked by any, is solved by none.

As twelve o'clock in the day approaches, customers begin to arrive; and from noon until six P.M., a never-ceasing little tide of men flows in and out of Tupp's in Little Lombard Court, attacking the bread, cheese, sausages, pies, eggs, and sandwiches, until, when the latter hour strikes, not a crumb of edibles is left in the place.

During these six hours, Mrs Tupp has ample opportunity of reviewing through her spectacles a very large contingent of the City army of desk-workers. Seedy old men, with coats white at the elbows from over-wear, creep in and have a fourpenny lunch—bread, cheese, and a glass of beer—which they buy at the counter, and carry away to a corner to eat. Dainty, dapper, young men, who at night blossom into gorgeous members of the 'Masher' fraternity, come and block up the counter while they munch a sandwich and discuss the latest burlesque over their glass of 'bitter.' Severe men, neither young nor old, but of a sort of iron-gray tint, rush in, snap up a sausage and bolt it as though to spend a moment out of business during business hours were a heinous offence. Small boys just out of school, who believe themselves to be full-grown men of the world because they are 'in the City,' saunter up to the counter, and select with great judgment the crustiest piece of 'household' and the daintiest piece of cheese.

A bank porter, a commissionaire, or a policeman, occasionally lends colour to the scene; but these last never do more than buy sandwiches for which they have been sent, or quaff beer in a mild and hasty manner at the door; for Mrs Tupp looks at *them* from *over* her spectacles, and to be subjected to such a gaze as this is to lose one's 'staying-power.'

All sorts and conditions of men can, however, have bite and sup at Mrs Tupp's hands. But while they are within her domain—such is her influence—even the wildest of her customers has to check his flow of spirits. 'DECORUM' is written on the Tuppian brow; and from those spectacles in front of the Tuppian eyes, there irradiates a chilling influence of the proprieties sufficient to curb the most rascally fellow that ever stepped. If the conversation should get too loud, the raising of Mrs Tupp's right hand holding a black-handled knife which she has been perhaps polishing with the cloth in her left, is enough to reduce at once the speakers' tones to the level which suits the hostess's ideas as to what is proper; and all the customers—men as they are—submit without a murmur to Mrs Tupp's rule while under Mrs Tupp's roof.

I only once saw Mrs Tupp ruffled, and the cause of the disturbance of the good woman's equanimity was merely the simple entrance into the house of one of her own sex who wanted refreshment. The scene was certainly curious, and to the men who were in the place was inexplicable. This is what happened. A respectable middle-aged woman, with a large reticule in her hand, and a large bonnet on her head, flustered and hot, probably from her want of acquaintance with City ways and customs, entered the shop and went in rather a wobbling way towards the counter. Her journey from the door to the counter was not long, not more than five yards; but while she was making it, I observed Mrs Tupp, like a hen before whose coop an impertinent dog is making investigations—swelling out and growing quite stiff and upright—assume an attitude which betokened that she regarded the would-be customer as a being belonging to an unknown sex of an unrecognised and antagonistic race.

'What is it you may please to want, 'm?'

'Well,' stammered the stranger, 'I think I'll have a roll, and some butter, and, O yes! an egg, if you'll be so good; and, and'—

'You must go somewhere else,' was the quiet, cruel reply of the Tupp, flung in just when the hungry woman had arrived at quite an interesting and appetising part of her order—'You must go somewhere else.'

The stranger evidently did not understand. She thought, perhaps, that this mandate to move on was merely an indication that she was to seek another part of the premises for her refreshment-taking, for she said: 'Very well, mum; will you show me the way?' With a sweep of her knife, which had something quite commanding in it, Mrs Tupp indicated—the door!

The surprise of the stranger was genuine, and she seemed rooted to the spot while she gasped out: 'What do you mean, mum?'

'I mean,' Mrs Tupp answered, 'that we don't serve *persons* here; and having said this, the relentless hostess turned her back on us all, and

seemed, from the shrugging of her shoulders, to be asking her maids whether they 'ever saw the like of that before.'

The poor stranger, now in speechless perplexity at the glances of dozens of curious male eyes which were directed towards her, somehow got to the door and out of it, and was no more seen.

#### LEAD-POISONING AND ITS REMEDY.

MANY of our most important chemical manufactures cannot be carried on without serious detriment to the health of the workpeople, unless a number of necessary precautions are taken. The manufacture of white-lead is one of these, and has been for upwards of a century the cause of a very distressing malady known as lead-poisoning or lead-colic. People who pass much of their time in white-lead works, or who frequently manipulate colours containing lead, are apt to be struck down with this insidious disease, which in most cases comes on gradually, but in some with extraordinary rapidity. Sickness and violent colics accompanied by constipation are the first symptoms, and in a short time a bluish tint is observed on the edges of the gums. After a time, neuralgic pains, paralysis, and epilepsy, may supervene. It is a serious disease, and often very obstinate as regards treatment.

So much illness of this description has arisen of late years, and the number of deaths from lead-poisoning have increased so rapidly with the extension of the white-lead manufacture, that the subject is at the present time attracting very considerable attention in Great Britain. The recent Report of the Chief Inspector of Factories certainly presents a most deplorable picture of the condition of the men and women engaged in works of this kind. It is only in a small minority of cases that certain precautions are attempted in order to prevent wholesale poisoning. The Report shows us that in the generality of cases the persons employed in the white-lead works—who are of course ignorant of the physiological properties of lead and its compounds—receive no warning from their employers of the dangers of their employment, and are left without instructions as to the means of avoiding them. In St Leonards, Shoreditch, twenty-three sufferers from lead-poisoning were admitted into the parish infirmary in eighteen months; three of them died, and in several other cases the health of the sufferers was ruined for ever. During only twelve months, fifty-four cases of lead-poisoning were received into the Holborn Workhouse Infirmary; and the same story repeats itself in numerous other instances. In fact, matters in this respect have arrived at such a crisis that the Chief Inspector very properly considers that legislation is imperatively required to render the necessary precautions compulsory in all white-lead works. But alas! these precautions, however carefully they may be carried out, are quite inadequate to put a stop to the evil. The introduction of the safety-lamp

has not done away with disastrous explosions in coal-mines; and compelling men and women engaged in lead-works to wear respirators, and to wash their hands before meals, &c., will not eradicate lead-poisoning. The very fact of living day by day in an atmosphere of lead-dust, which penetrates the mouth, the nostrils, and the pores of the skin—the fact of being constantly in contact with so insidious a substance, must sooner or later tell upon the strongest constitutions, in spite of all precautions, however rational in appearance.

But lead-poisoning does not stop at white-lead works; plumbers, glaziers, and painters, suffer from it frequently; for white-lead, in the form of putty, mastics, and colours or pigments, finds its way into a vast number of places where we least expect it. When we purchase a fine green or red paint, which the oil-and-colour man assures us is perfectly harmless, we little suspect that more than half of that colour is white-lead. Though the green, the blue, or the red substances themselves may be innocuous, they are always largely diluted with white, to bring them to the proper shade and cause them to 'cover' well; and in this way, until very recently, white-lead has been exclusively employed as the basis of all coloured pigments.

But, it may be asked, why do not chemists discover some safe material to take the place of white-lead? This is no doubt an easy question to ask, and rational enough. The problem has been, however, one of the most difficult in the whole realm of chemistry. The late Dr Stenhouse, a most eminent chemist, formerly Professor at Edinburgh, grappled with the problem, and introduced a light-coloured antimony paint which is far less dangerous than white-lead; but it was proved to be only applicable as a basis for coloured pigments, and would not take the place of white-lead as a pure white colour. Before Stenhouse, oxide of zinc had been proposed as a safe substitute for white-lead, and has long been manufactured for that purpose; but although beautifully white, it does not work so well, or 'cover' so well as white-lead, and appears to be more expensive. More recently, another kind of white zinc pigment known as 'Griffiths' Patent White,' has proved far more satisfactory in this respect, and appears likely to supersede white-lead altogether. For several years its manufacture was kept a profound secret; but Dr Phipson of London made known its composition in a paper read at the International Congress of Hygiene, held at Paris in August 1878, and called attention to its merits. It is now largely manufactured in Liverpool by Messrs Griffiths and Berdoe; and if it were as widely known as it deserves to be, we should in all probability hear no more of lead-poisoning from this particular cause.

This new white pigment, which possesses all the properties of white-lead without its dangers, is a compound of sulphur, oxygen, and zinc. We are informed that there has never been a case of illness among the workmen engaged in its manufacture. By mixing it with non-poisonous blues, reds, yellows, &c., a whole series of beautiful and harmless pigments have been produced, which rival in every respect the same pigments having a basis of white-lead.

The remedy for lead-poisoning, as far as colours and pigments are concerned, has, therefore, been

found, and is available to the public. This is no mean result, as the great majority of cases of this disease emanate entirely from the manufacture or use of white-lead pigments; and those which are traced to the action of water upon lead-pipes and cisterns form a very minute proportion. The chemist has done his duty to society by discovering a substance which is a perfect and harmless substitute for the dangerous white-lead, and it only remains now for the public to take advantage of this discovery.

#### CUPID AND THE MAIDEN.

'NAUGHTY Cupid! saucy elf!  
Tell me something of thyself.  
Many tales of thee I'm told,  
False and true, and new and old;  
Oh, those tales, so old yet new,  
Tell me, Cupid, are they true?  
I have never felt thy dart;  
Steeled against thee is my heart.  
I am heart and fancy free;  
Love can never conquer me!  
Still, sly archer, I would fain  
Learn the secrets of thy reign.  
What dark arts dost thou employ?  
Tell me, little saucy boy.  
Is there poison in thy stings?  
For what use are those swift wings?  
Swift to come, and swift to go,  
Prithee, Cupid, art thou so?'

'Lovely Maiden, frank as fair,  
Cupid bids thee now beware,  
For the time has come at last  
When my chains shall bind thee fast.  
Hast thou never felt the smart  
Caused by my unerring dart?  
Hast thou all my wiles defied?  
Entrance to thy heart denied?  
Then 'tis time that Love should come,  
In thy breast to make his home.  
Maiden, shall I tell thee why  
I have always passed thee by?  
Why that pure, proud heart of thine  
Worships not before my shrine?  
I've delayed, fair Maid, thus long  
But to make my power more strong.  
Skill and care have formed this dart,  
Which transfixes now thy heart.  
Fear not!—thine are pleasing ills;  
Cupid wounds, but rarely kills!

'Lovely Maiden, frank as fair,  
Where is now that haughty air?  
Conscious blushes dye thy cheek;  
Tongue scarce dare essay to speak.  
Has thy cold heart tender grown?  
Has thy proud defiance flown?  
Art thou still so fancy free?  
Or has Cupid conquered thee?  
Rosy fetters thou shalt wear;  
Fair are they, and light as fair;  
For, believe me, all my arts,  
Nature, gracious Dame, imparts.  
If to nature true thou be,  
Cupid shall be true to thee;  
Swift to come, and slow to go,  
Such is Love—thou 'lt find it so!'

FLORENCE NIXON.

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